## Rec'd PCT/PTO 08 SEP 2004

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization

International Bureau



10/506973

(43) International publication date 18 September 2003 (18.09.2003)

PCT

(10) International publication number

WO 03/076860 A1

(51) International patent classification<sup>7</sup>:

F28F 1/12

(72) Inventor; and

(21) International application number:

PCT/EP03/01852

(75) Inventor/Applicant (US only): WÖLK, [DE/DE]; Olgastr. 126, 70180 Stuttgart (DE).

(22) International filing date:

24 February 2003 (24.02.2003)

(25) Language of filing:

German

(26) Language of publication:

German

(30) Data relating to the priority:

102 10 458.1 102 49 451.7

9 March 2002 (09.03.2002) 24 October 2002 (24.10.2002) DE DE

(71) Applicant (for all designated States except US): BEHR GMBH & CO. [DE/DE]; Mauserstrasse 3, 70469 Stuttgart (DE)

(74) Joint Representative: BEHR GMBH CO.; Mauserstrasse 3, 70469 Stuttgart (DE).

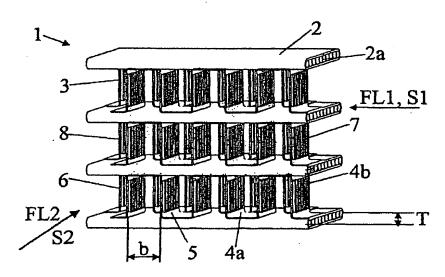
- (81) Designated states (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated states (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[continued on next page]

As printed

(54) Title: HEAT EXCHANGER

(54) Bezeichnung: WÄRMETAUSCHER



(57) Abstract: The invention relates to a heat exchanger (1), especially for motor vehicles, which comprises flat pipes (2) through whose interior a first fluid (FL1) flows and that can be impinged upon externally by a second fluid (FL2). The flat pipes (2) are substantially disposed at an angle to the direction of flow (S2) of the second fluid (FL2) and parallel relative one another and are spaced apart so as to configure flow paths for the second fluid (FL2) that extend through the heat exchanger. Cooling ribs (3) are disposed in the flow paths and extend between respective adjacent flat pipes (2). A plurality of wavy ribs (3) are provided as the cooling ribs. These wavy ribs are disposed one behind the other in the direction of flow (S2) of the second fluid (FL2) and are off-set from one another in the direction of flow (S1) of the first fluid (FL1).